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AN ANALYSIS OF THE COOPERATIVE ENGLISH TEST AS A PREDICTOR OF  
SUCCESS IN ENGLISH 1A AND ENGLISH 1A71 AT STOCKTON COLLEGE.  
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TO DETERMINE HOW EFFECTIVELY THE COOPERATIVE ENGLISH  
TEST PREDICTS STUDENT SUCCESS IN FRESHMAN ENGLISH AT STOCKTON  
COLLEGE, THIS STUDY WAS CONDUCTED (1) TO OBTAIN STATISTICAL  
COMPARISONS BETWEEN FINAL SEMESTER GRADES OF A SAMPLE OF THE  
COLLEGE TRANSFER POPULATION WITH THE WHOLE TEST AND EACH OF  
ITS PARTS, (2) TO ANALYZE BY PERCENTAGES THE PROPORTION OF  
STUDENTS WHO EARNED VARIOUS GRADES, ACCORDING TO THEIR  
RELATIVE PLACEMENT ON THE TEST AND ITS PARTS, (3) TO ANALYZE  
THE REASONS FOR FAILURE, AND (4) TO DETERMINE THE PROPORTION  
AND AMOUNT OF SUCCESS OF THOSE WHO WERE GIVEN SPECIAL  
PERMISSION TO TAKE THE COLLEGE TRANSFER COURSE WITH A SCORE  
LESS THAN THE NORMALLY REQUIRED 150. DISTRIBUTIONS COMPARING  
TEST SCORES AND FINAL GRADES ARE PRESENTED GRAPHICALLY.  
ANALYSES OF PREDICTIVE QUALITIES BY MEANS OF THE PEARSON  
PRODUCT-MOMENT COEFFICIENT OF CORRELATION AS WELL AS CHI  
SQUARE AND PHI COEFFICIENT TESTS SUGGEST THAT THE CLOSEST  
RELATIONSHIP IS BETWEEN THE STUDENT'S FINAL GRADES AND THE  
MECHANICS PART OF THE TEST. THE VOCABULARY, EFFECTIVENESS,  
AND SPEED SECTIONS OF THE TEST AS WELL AS THE FINAL GRADES OF  
STUDENTS WHO TOOK THE COURSE WITH SPECIAL PERMISSION SEEM TO  
INDICATE NO APPARENT RELATIONSHIP BETWEEN TEST SCORES AND  
FINAL SEMESTER GRADES. ADDITIONAL INFORMATION FROM  
QUESTIONNAIRES REVEALS THAT TEACHERS CONSIDER EXCESSIVE,  
UNEXCUSED ABSENCES AS THE MAJOR CAUSE OF STUDENT FAILURE.  
THEREFORE, THE AUTHORS QUESTION THE ADVISABILITY OF USING  
OTHER THAN THE MECHANICS PART OF THE TEST FOR PLACEMENT IN  
THE FRESHMAN ENGLISH COURSE. (AUTHOR/BN)

AN ANALYSIS OF THE COOPERATIVE ENGLISH TEST

AS A

PREDICTOR OF SUCCESS IN ENGLISH 1A AND ENGLISH 1A71 AT STOCKTON COLLEGE

BY

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1960

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE  
OFFICE OF EDUCATION

TE 500 027

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## 1. STATEMENT OF THE PROBLEM

Achieving a "Total of Scaled Scores" of at least 150 on the Cooperative English Test, Form RX, Higher Level, 1949, has been necessary for several years at Stockton College for a student to be permitted to register for the "college transfer" Freshman English composition course. Until then, he is assigned either to a remedial composition course or to a reading course or both.

The purpose of this study, then, is to discover how effective this Cooperative English Test and its several parts are in predicting the amount of success a student may achieve in Freshman English.

The method of determining an answer to these questions was: (1) to obtain statistical comparisons between final semester grades of a sample of the college transfer population with the whole test and each of its parts, (2) to analyze by percentages the proportion of students who earned various grades, according to their relative placement on the test and its parts, (3) to analyze the reasons for failure of those who failed, and (4) to determine the proportion and amount of success of those who were given special permission to take the college transfer course in spite of the fact that their score was less than the normally required 150.

The sample chosen for this study includes 215 students, all but 17 of whom qualified for the college-transfer course, English 1A and 1A71,\* when taking the Cooperative English Test as a part of the entrance testing program of Stockton College.

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\*English 1A meets three hours a week for three units of credit, while English 1A71 meets five hours a week for four units of credit, one unit of which is laboratory and is normally not accepted for transfer to upper-division schools. Obviously 1A71 is designed to permit additional instructor attention to this less capable group. These two courses will be referred to separately throughout the rest of this paper as above, or together as English 1A-1A71.

These remaining 198 were all who took and passed (a score of 150 or better) the entrance examination for Fall Semester, 1958 and enrolled in English 1A-1A71 for Fall 1958, with the exception of students in one section out of thirteen, which was inadvertently excluded. All of the rest of the students in English 1A-1A71 during Fall 1958 either qualified by way of boosting their score as a result of taking one or more remedial courses, or qualified earlier than Fall 1958 by their entrance examination. These are NOT included in the sample.

## 2. PROCEDURE

### 2.1 Procurement of the raw data

The Stockton College IBM office furnished a complete set if IBM cards punched with the name and final grade of each student in all sections of English 1A-1A71 for Fall 1958. A separate set of IBM cards was available with the Fall 1958 entrance test scores, including sub-scores on each of the five parts of the Cooperative English Test: Total, Mechanics, Effectiveness, Vocabulary, Level,\* and Speed.

From the appropriate cards of these two sets, there was prepared a third set, the sample for this study. It includes all those students eligible for 1A-1A71 on the basis of their entrance tests plus the few who registered in 1A71 by special permission or error.

### 2.2 Treatment of the data

2.21 Scattergrams of group scores and grades were prepared and coefficients of correlation were obtained. The formula used is a variation of the Pearson product-moment formula, which assumes homoscedasticity of the row and column arrays, and assumes a mean of zero during the early part of the manipulation.

An attempt at further analysis of predictive qualities was made by means of chi square and phi coefficient tests of the data derived from the Mechanics

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\*Since the raw scores on the "Level" section range from 9 to 86, but are interpreted in relationship to how many thirds of the reading selection the student finished, a low raw score for a person who completed only one-third of the reading may result in a higher standard score than a higher raw score for a person who completed two-thirds of the reading. Because this complicated the statistical treatment, analysis of the "Level" section was eliminated from this study.

part of the Cooperative English Test. The Mechanics test was selected for further analysis because it appeared as relatively the best instrument on the basis of criteria previously applied in the study.

In order to do the grouping required for such tests, division points were selected as follows:

1. Scaled score of 50--the point which is approximately 0.6 of one standard deviation below the mean score (55.7), according to cooperative test published norms for entering freshmen at four-year liberal arts colleges. This point would represent the beginning of the "C" grade range if one were "grading on the curve."
2. Scaled score of 61--the point which is approximately 0.6 of one standard deviation above the mean score described in item 1 and which would correspond to a letter grade of "B" in the norm group.
3. Scaled score of 72--the point which is approximately 1.8 standard deviations above the mean described in item 1 and which would correspond to a letter grade of "A."

2.22 Graphs were constructed to compare semester grades with the Total of Scaled Scores and with the raw score of each part of the Cooperative English Test. The three intervals on these graphs were chosen so that the second interval in each table represented the normal range for English 1A71; the three intervals for Figure I are by definition as follows:

- a. Top, 165-254--those eligible for English 1A
- b. Middle, 150-164--those eligible for 1A71
- c. Special, 135-149--those admitted to 1A71 by special permission

For the other tables, the intervals are approximations of the range covered by English 1A, 1A71, and specials. These approximations are necessary because a student's Mechanics score, (1/3 of the Total of Scaled Scores of 150) necessary for 1A71, might have been less than 50, although his other scores were enough higher to offset it and still make him eligible for 1A71. The first interval is made up of all those who fall below the second interval; and the third interval (English 1A) of all those who fall above the 1A71 range.

2.23 A separate analysis was made of those students in the course with a Total of Scaled Scores below 150. Although at first these people seemed to contaminate the study somewhat, their presence does add some information regarding what happens to those who score lower on the entrance test. The following data were collected: the previous college English course taken, if any; grade earned in the previous course; and grade earned in English 1A71.

2.24 Failures were analyzed by having both the teacher of the English course and the student's counselor describe why they thought the student failed.

### 3. RESULTS

3.1 Statistical measures of the relationships between final semester grades with both the total and various parts of the Cooperative English Test were sought by the study. How effectively does the Cooperative English Test enable one to predict the amount of success a student will have in English 1A-1A71? Table I attempts a study of the relationship between final semester grades with the whole Cooperative English Test and its parts. There were 215 students represented in each study of relationship.

TABLE I

CORRELATION BETWEEN THE FINAL SEMESTER GRADES  
and the  
COOPERATIVE ENGLISH TEST AND ITS PARTS

	Total of Scaled Scores	Mechanics Raw Score	Vocabulary Raw Score	Effectiveness Raw Score	Speed Raw Score
Final Grades (ABCDF) N=215	.31 ± .06	.40 ± .06	.23 ± .07	.20 ± .07	.00 ± .07

Examination of the coefficients of correlation in Table I indicates that several of the sections of the Cooperative English Test (Speed, Vocabulary, and Effectiveness) had practically no correlation with semester grades and that one part, Mechanics, had a higher coefficient of correlation than the total test.

### 3.11 Chi square and phi test

How effectively does the Mechanics part of the Cooperative English Test predict success in English 1A-1A71 as measured by final semester grades?

TABLE II

PREDICTIVE CHARACTERISTICS  
OF THE  
MECHANICS PART OF THE COOPERATIVE ENGLISH TEST IN  
TERMS OF EARNED SEMESTER GRADES  
N=215

Group	Division by Grades	Division by Scaled Score	No. Correct Prediction	No. Incorrect Prediction	Percent Correct Prediction	$\chi^2$	$\phi$
I	ABC	>50	131	17	0.88	5.3	0.16
	DF	<u>&lt;50</u>	16	51	0.23	5.3	0.16
II	AB	>61	41	13	0.76	26.6	0.35
	CDF	<u>≤61</u>	104	57	0.65	26.6	0.35
III	A	>72	4	6	0.40	8.7	0.20
	BCDF	<u>≤72</u>	189	16	0.92	8.7	0.20

The data in Table II indicate that the odds are in favor of correct prediction for all groups excepting <50 and >72. Chi squares indicate that the difference in the two score groups in each division tests well in respect to significance. The difference in Division I is significant at between the 0.02 and 0.01 level and in Divisions II and III at above the 0.01 level. Phi coefficients range from 0.16 to 0.35. As measures of validity, the obtained coefficients describe acceptable standards.

On the basis of the criteria applied, the Mechanics test would appear to do a reasonably acceptable job of predicting placement in all categories, except equal to or less than 50 and greater than 72. In Group I, there appears

to be some limitation in the size of the sample for this division (equal to or less than 50). However, there is an indication that there might be a fairly good chance for people who were excluded at this point to succeed in the course. Therefore, all other available data should certainly be given careful consideration and provision should be made for reasonable latitude in judgement in the matter of selection.

3.2 How well does the Cooperative English Test and its parts serve as a segregating instrument to keep out those likely to fail or do poorly in English 1A71? To present this information visually, the following graphs were constructed:

3.21 The Total of Scaled Scores

Figure I shows the comparison on the basis of the Total of Scaled Scores with final semester grades.

FIGURE I

COMPARISON OF TOTAL SCALED SCORE ON COOPERATIVE ENGLISH TEST  
WITH SEMESTER GRADES  
N=213

Total Scaled Score	SEMESTER GRADES RECEIVED							TOTAL		Per cent of Sample							
	N	F	%	N	D	%	N	C	%	N	B	%	N	A	%	N	%
1	2			3	4		5	6		7		8					
1A (165-254)	3	2.8%	10	9.3%	28	26.2%	48	44.9%	18	16.8%	107	100%					49.1%
1A71 (150-164)	9	9.9%	7	7.7%	49	53.9%	25	27.4%	1	1.1%	91	100%					42.9%
Special (135-149)	2	13.3%	2	13.3%	6	40.0%	4	26.7%	1	6.7%	15	100%					7.0%

Before examining the results, let the reader be reminded the 135-149 interval includes only those who took English 1A71 by special permission or error. Interval 150-164 includes only those eligible for English 1A71. The higher interval, then, includes only those eligible for English 1A. Examination of the "F", "D", "C" grades reveals a somewhat noticeable smaller proportion of these grades as one proceeds from the lowest to the highest interval. Likewise, there is a somewhat rising proportion of "B" and "A" grades from the lowest to the highest interval.

## 3.22 Mechanics

Figure II shows the comparison of the semester grades with one part of the Cooperative English Test, Mechanics.

FIGURE II

COMPARISON OF MECHANICS RAW SCORE  
on  
COOPERATIVE ENGLISH TEST WITH SEMESTER GRADES  
N=212

Mechanics Raw Score	SEMESTER GRADES RECEIVED						TOTAL	Per cent of Sample									
	N	F	%	N	D	%	N	C	%	N	B	%	N	A	%	N	%
1	2			3	4		5	6		7							
1A (108-155)	3	3.1%		4	4.2%		22	22.9%		50	52.1%		17	17.7%		96	100%
1A71 (84-107)	6	8.1%		9	12.1%		38	51.4%		20	27.1%		1	1.3%		74	100%
Special (60-83)	5	11.9%		5	11.9%		22	52.4%		8	19.0%		2	4.8%		42	100%

Examination of this table reveals an even more pronounced "flow" than for the Total of Scaled Scores of Table II. The "F's" and "D's" and "C's" decrease from the lowest to the highest interval. The "B's" and "A's" increase from the lowest to the highest interval. One would expect this trend to be more pronounced for Mechanics than for Total of Scaled Scores since the coefficient of correlation for Mechanics is higher.

## 3.23 Vocabulary

Figure III shows the comparison of semester grades with the raw scores of the vocabulary section of the Cooperative English Test.

FIGURE III

COMPARISON OF VOCABULARY RAW SCORE ON COOPERATIVE ENGLISH TEST  
WITH SEMESTER GRADES  
N=215

Vocabulary Raw Score	SEMESTER GRADES RECEIVED										TOTAL		Per cent of Sample				
	N	F	%	N	D	%	N	C	%	N	B	%	N	A	%		
1	2			3			4			5			6		7	8	
1A (31-62)	4	4.1%		11	11.4%		31	31.9%		36	36.1%		15	15.5%	97	100%	45.2%
1A71 (19-30)	6	8.1%		5	6.7%		29	39.3%		30	40.5%		4	5.4%	74	100%	34.4%
Special (3-18)	1	9.1%		3	6.8%		24	54.5%		12	27.3%		1	2.3%	44	100%	20.4%

An examination of the table reveals that there is a slight but perceptible grouping of "F", "D", and "C" grades in the lower two intervals, and a definite grouping of "B" and "A" grades in the highest interval. This grouping is not nearly so pronounced as it is with the Total of Scaled Scores (Table II) or Mechanics (Table III.)

## 3.24 Effectiveness

Figure IV shows the comparison of semester grades with the raw scores on the Effectiveness section of the Cooperative English Test.

FIGURE IV

COMPARISON OF EFFECTIVENESS RAW SCORE ON COOPERATIVE ENGLISH TEST  
WITH SEMESTER GRADES  
N=213

Effectiveness Raw Score	SEMESTER GRADES RECEIVED												TOTAL	Per cent of Sample	
	N	F	%	N	D	%	N	C	%	N	B	%	N	A	%
1	2		3	4		5	6		7		8				
1A (42-59)	4	4.0%	30	8.9%	30	29.8%	45	44.4%	13	12.9%	101	100%	101	47.4%	
1A71 (36-41)	7	9.7%	6	8.3%	34	47.3%	20	27.8%	5	6.9%	72	100%	72	33.8%	
Special (27-35)	3	7.5%	4	10.0%	19	47.5%	12	30.0%	2	5.0%	40	100%	40	18.8%	

An examination of the table reveals that there is a slight but perceptible grouping of "F", "D" and "C" grades in the lower two intervals and likewise a slight but perceptible grouping of "B" and "A" grades in the highest interval.

## 3.25 Speed

Figure V shows the comparison of the semester grades with the raw scores on the Speed section of the Cooperative English Test.

FIGURE V

COMPARISON OF SPEED RAW SCORE ON COOPERATIVE ENGLISH TEST  
WITH SEMESTER GRADES  
N=215

Speed Raw Score	SEMESTER GRADES RECEIVED										TOTAL		Per cent of Sample					
	N	F	%	N	D	%	N	C	%	N	B	%	N	A	%	N	%	
1	2			3	4		5	6		7								
1A (24-77)	6	8.1%		13	17.3%		23	30.6%		25	33.3%		8	10.7%		75	100%	24.8%
1A71 (12-23)	4	4.2%		2	2.1%		43	45.4%		39	41.0%		7	7.3%		95	100%	44.3%
Special (0-11)	4	8.9%		4	8.9%		18	40.0%		14	31.1%		5	11.1%		45	100%	20.9%

An examination of Figure V shows that there is no apparent relationship between semester grades and scores on the speed section of the Cooperative English Test.

## 3.26 Scores Below 150

Some additional information was gathered about the seventeen students who took English 1A71 who did not qualify on the basis of the Total of Scaled Scores of 150 but who took the course anyway, presumably by special permission. Table III gives this information.

TABLE III

THE SEVENTEEN STUDENTS WHO TOOK ENGLISH 1A71  
WITH A COOPERATIVE ENGLISH TEST SCORE OF LESS THAN 150

Total of Scaled Scores	Grade Earned	Remarks
149	B	
149	C+	
149	C	
149	C	
149	D-	
148	B	
148	D-	
147	B	
147	F	
146	B	
146	C-	Took English 74, Fall 1957. Earned a "C".
143	A	
141	C	
141	C	
136	F	Erroneously enrolled in 1A71 and not discovered until too late to change.
134	B	Previously completed two quarters of college-transfer English composition with grades of "D" at another collegiate institution.
111	C	Previously completed two semesters of English 73 with a grade of "D" at Stockton College.

An examination of this information seems to indicate no apparent relationship between final semester grades and the Cooperative English Test.

## 3.27 Failures

An investigation was made into the purported reason for failure of the fourteen students who failed English 1A-1A71. Table IV provides this information.

TABLE IV

REASONS FOR FAILURE GIVEN BY COUNSELORS AND INSTRUCTORS  
for the  
FOURTEEN WHO FAILED

Total of Scaled Scores	Reason Given by Counselor	Reason Given by Instructor
213	Perfectionist; unable to budget time well	Much ability, no confidence. Does not meet deadlines.
185	Disorganized and academically unstable.	Did little work and that carelessly; no term paper
173	Working on chemistry instead; no time for term paper	No term paper
164	Lack of interest and effort.	Excessive unexcused absences.
163	Job for 40 hours a week; 14 units besides	Did little work; no term paper or compositions.
162	Left school to get married; Reading score: 48; also took Eng. 75.	Excessive unexcused absences.
161	Not interested	Did almost nothing
158	15 units; his only F; has only one eye	Primarily a feeling of inadequacy; didn't do term paper.
155	F on attendance, 10/16; in other classes too	Withdrew September 10
152	Home problems; finance work, etc..	Excessive unexcused absences

TABLE IV (cont')

Total of Scaled Scores	Reason Given by Counselor	Reason Given by Instructor
151	Personality clash with instructor--no initiative to drop section or change	Did very little work; no term paper; few compo- sitions.
150	23 hrs. a week work for pay, plus 13 units--too much. 1/14--F because of absences.	Excessive unexcused absences.
147	Attendance; F in Phy Sci 1	Did very little work; no compositions or term paper.
136	Lacks emotional maturity	Term paper unacceptable.

This information was given by each counselor to one of the writers personally. In no case did the counselor give "lack of academic ability" as one of the basic reasons he thought the student failed. The information from the instructors was collected by a very short questionnaire which asked the instructor to check any of the following reasons there was, plus adding any others he desired. The reasons listed in order on the questionnaire were: (1) exceeded the unexcused absence limit, (2) lacked ability, (3) lacked motivation, (4) didn't do required term paper, (5) other (describe please). No instructor for any of the students who failed indicated "lacked ability" as one of the reasons.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

##### 4.1 Derived coefficients

Since a coefficient of correlation (Pearson product moment) summarizes in one numerical measure the degree of relationship existing, its main value for the purpose of this study is to provide an index comparison among the Total of Scaled Scores and the raw scores of various parts of the Cooperative English Test with final semester grades of English 1A-1A71. Because the Vocabulary, Effectiveness, and Speed coefficients or correlation are so low as to indicate either no positive relationship with final semester grades or a very slight relationship, this study presents no evidence to support using those parts of the test for the purpose of determining which students shall be permitted or denied the opportunity of enrolling in Stockton College's English 1A-1A71. Later discussion, therefore, will ignore these parts.

The chi square and phi test indicate that the Mechanics part of the Cooperative English Test makes a reasonably good prediction of success in English 1A-1A71. Therefore, since these statistical tests (chi square, phi, and Pearson coefficient of correlation) indicate that the Mechanics part of the Cooperative test is superior to the total test and to any other of its parts (except Level, which was eliminated from the study) the writers would judge that the score on the Mechanics section should be used, instead of the Total of Scaled Scores, to determine a student's eligibility for English 1A-1A71. Almost as important is future use of the derived coefficients to compare efficiency of other tests which might be utilized for the same purpose as the Cooperative English Test, or a revision of the test, now is used.

4.2 In the opinion of the authors, the matter presented graphically supports the conclusions derived from the consideration of coefficients.

4.3 It is desirable to emphasize here that none of the fourteen who failed was described either by the counselor or teacher as one whose failure seemed to be caused by lack of ability.

4.4 Since Effectiveness, Vocabulary, and Speed raw scores appear to have little or no value in determining eligibility or predicting probable achievement in English 1A-1A71, and since the whole of the Cooperative English Test (Total of Scaled Scores) is less effective than one part, Mechanics, the writers recommend that consideration should be given to using only the Mechanics part for the purpose of selection.

4.5 At least every two years, follow-up studies of a similar or more precise nature should be made to measure progress toward the ideal.

4.6 The writers suspect that these findings may have some relevance for similar situations in other junior colleges.

## 5. SUMMARY

In order to enroll in the college-transfer English 1A-1A71 freshman composition course, a student at Stockton College must earn a Total of Scaled Scores of 150 on the Cooperative English Test. An analysis was made to discover the effectiveness both of the test and of the score of 150 in screening entrants to this course. The statistical measures used were the Pearson product-moment coefficient of correlation along with the chi square and phi tests, comparing final semester grades in the English 1A-1A71 course and the scores on the Cooperative English Test. The sample was made up of 215 students, all but 17 of whom attained at least the score of 150 when they took the test as part of the entrance battery for the Fall Semester, 1958.

The Pearson product-moment coefficients of correlation for the Vocabulary, Aspeed, and Effectiveness parts of the Cooperative English Tests were so low as to indicate a negligible amount of positive relationship. The coefficient of correlation for the Total of Scaled Scores was  $.31 \pm .06$  and for the Mechanics part was  $.40 \pm .06$ . Further analysis of the Mechanics part was made by means of the chi square and phi test; this analysis indicated that this part might have a worthwhile predictive value.

Graphs were prepared to show visually the relationship between semester grades and the rank by groups enrolled in English 1A-1A71 as determined by the selection process. Those three groups were: (1) enrollments in English 1A71 by special permission (Total of Scaled Scores of less than 150), (2) regular enrollment in English 1A71 (150-164), and (3) enrollment in English 1A (above 164).

In addition, some further information was gathered regarding the seventeen students who entered English 1A71 by special permission, and of the ones who failed either English 1A-1A71. It is interesting and important to note that no counselor nor any instructor attributed failure to the student's lack of ability.

## 6. RESULTANT ACTION

Beginning with the Fall semester, 1960, placement in English 1A-1A71 will be on the basis of the Mechanics and Reading parts of the Cooperative English Test instead of the Total of Scaled Scores, thus eliminating the Effectiveness part. The cutting score, the sum of the scaled scores of the two parts, will be a minimum of 100 for eligibility to English 1A71 and 115 for English 1A.

It is hoped that a follow-up study can be made soon of the effectiveness of the new procedure and of the revised form of the Cooperative English Test.